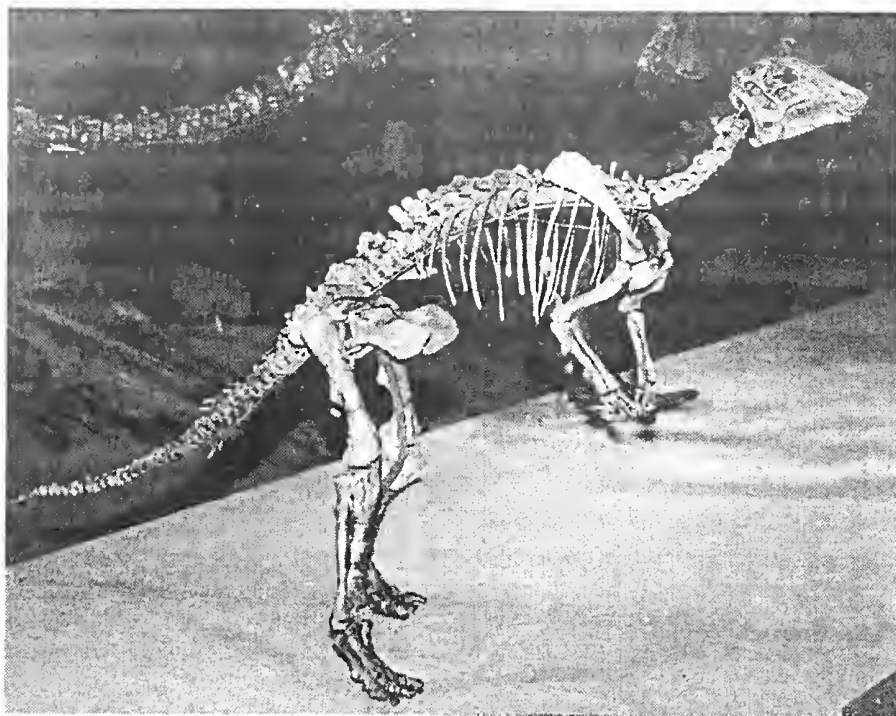
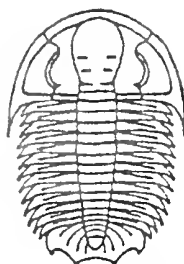


THE FOSSIL COLLECTOR

BULLETIN No. 51

MAY 1997



Arstanosaurus sp. (Juvenile). Late Cretaceous, Bayn Shireh Formation. Gobi Desert, Peoples' Republic of Mongolia. Photograph taken at the Great Russian Dinosaur Exhibition, Queensland Museum, 1995. Height of specimen, 50 cms.

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Taxonomic Disclaimer

This publication is not deemed to be valid for taxonomic purposes [see article 8b in the *International Code of Zoological Nomenclature* 3rd edition 1985. Eds W. D. Ride *et al.*].

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EDITORIAL NOTES

Some people would remember the bold statement I made in Bulletin No. 49 with regard to my daughter being able to read geological maps before Little Golden Books. Well alas, I have failed, thanks to some very good friends who shall remain nameless ☺. These friends thought it best to send Ayla some Winnie the Pooh Golden Books for Christmas and my wife now takes great delight in reading these to her at every available opportunity. So much for a firm foundation in scientific principals, ho hum.

It would certainly be an understatement to say that the palaeontological community is alive with new discoveries at the moment. China is producing an ever increasing number of creatures with bird and dinosaur-like characteristics which is adding to the evidence that birds did evolve from dinosaurs. The latest discoveries are *Sinosauropteryx prima* and *Liaoningornis* which were both discovered at the same site as *Confuciusornis sanctus* (see Bulletin No. 46, page 8 for more on *C. sanctus*). The question as to whether these creatures were endothermic (warm-blooded) or ectothermic (cold-blooded) is still one that has to be answered.

Australia has not been quiet on the discoveries front either. In the vertebrate area of palaeontology there has been a new amphibian found in Triassic sediments of New South Wales, while here in Queensland, Jurassic dinosaur footprints have been found along with some other significant finds, watch the In The News section in upcoming issues for more on these.

New finds have also been made in the invertebrate and plant departments. There are several new genera and dozens of species of Devonian gastropods from both Queensland and Western Australia, the majority of which are in the process of being described. That well known Jurassic plant locality, Durakai, in Queensland, has turned up some previously unknown seed pods, a short article on this will appear in the September issue.

About this time of year, I usually tell everyone of the collecting trips I will be doing during the coming winter months. This year is going to be the exception as I do not wish to put a hex on myself, as I did last year, and considering I will be having a visit from my American friends come July-August, well, enough said. I will give

an after the event report in the September issue.

I must apologise for the error on pages 27-28 of Bulletin No. 50. The last few words on the last line on page 27 reads "user to locate all the towns, and indeed most" then, unfortunately, the sentence is not finished on page 28. The end of this sentence is "city suburbs in the country." This was an error on my behalf and hopefully I will be a little more careful in the future.

During the last few months I have had the opportunity to collect from several localities on the Darling Downs, here in Queensland. This gave me the chance to meet some members of the FCAA who I have not met in the past and as with my previous experiences the hospitality shown was indeed humbling. Thankyou to those people.

While I can only talk for Queensland, I am also very happy to see the relationship between professionals and amateurs improving all the time. I know the professional people at the Queensland Museum are truly appreciative of the time and effort amateurs put into collecting fossils then bringing them into the museum for inspection. I have been told of a recent example when an amateur was quite happy to donate several specimens he had collected which were either new or somewhat rare.

Coming up in the next issue of *The Fossil Collector*, Bulletin No. 52, is an excellent article on flying vertebrates by Dr Ralph Molnar, of the Queensland Museum. Also in the next issue will be an article on palaeontologically orientated internet sites that those of us with internet access can visit.

Along these lines, I would ask that if any reader has an interesting internet site they visit on a regular basis, or have visited, please send me the address and a description of what the site contains so that I can include it in the article. Some sites that come to mind are the Royal Tyrrell Museum in Canada, the National Museum of Natural History in the United States and the Smithsonian Institute, also in the US. There are also quite a few personal home pages around that deal with palaeontology, these are also suitable.

The deadline for Bulletin No. 52 is July 31, 1997. Till then, happy collecting.

A STUDY OF THE MOLLUSC FAUNA OF SPECTACLE ISLAND

Michael Keats. 33 Livingston Avenue, Pymble, New South Wales. 2073

Spectacle Island, in 1997, is a broadly equilateral triangular shaped man-modified outcrop of Hawkesbury sandstone and filled ground. It is located in the Parramatta River, Sydney Harbour, about ten kilometres upstream from South Head. It is positioned almost equidistant from:

Pulpit Rock to the north-north-west, 400 metres;

Cockatoo Island to the east, 300 metres;

Drummoyne Peninsula to the south-west, 300 metres; and

Snapper Island to the south-east, 400 metres.

Of the original outline only fragments remain. These are the rock platform at the north-east extremity and beaches at the south-east corner. Today, it is a very different island to that sighted by Captain Hunter and First Lieutenant William Bradley of *HMS Sirius* on February 3, 1788. Hunter, who was undertaking exploration work for Governor Phillip, decided to camp on Spectacle Island that night, rather than on the mainland, due to the large numbers of natives, many of whom had never seen a white man.

Originally the island was named Dawes Island, after Second Lieutenant William Dawes of the *Sirius*. Over time, the name Dawes Island became Spectacle Island due to its shape, like a lorgnette.

In 1862 the island was surveyed by one E. Knapp for the Governor, with the intent of it being developed as a powder magazine.

For more than 130 years, Spectacle Island has been added to and shaped with thousands of tonnes of rock and spoil from Cockatoo Island and the old Balmain coal mine. The ill-impact of these changes on the mollusc environment has been considerable.

During May 1996, a substantial survey of living inter-tidal molluscs, beach molluscs, and possible sub-fossil molluscs was undertaken by the author and Mr.

Des Beechey.

THE INTER-TIDAL LIVING MOLLUSCS

Even today, the biomass of the rock platform areas of Spectacle Island is impressive. Growths of the pink coralline algae *Corallina officinallis* and the introduced bryozoan *Watersipora arcuata* are almost universal. In some sheltered areas there are beds of the sea grass *Zostera capricorni*.

The living molluscs of the rock platform are dominated by the trochid *Austrocochlea porcata*. Many individuals exceed 40 mm in size, compared with a more normal size of 28 mm at Long Reef, on the coast immediately north of Sydney, and 15 mm at Wyargine Point, Balmoral Beach, directly opposite Sydney Heads. The mytilid *Mytilus galloprovincialis* and the ostreid *Saxostrea glomerata* are in scattered colonies, the former with large numbers of juvenile individuals which is consistent with the re-colonisation occurring in other parts of the upper harbour.

THE BEACH FAUNA

The dead beach fauna bears little resemblance to the current live fauna described above. The list of specimens is extensive and typical of a number of sites along the length of the Parramatta River, from Meadowbank (some 19 kilometres from the Sydney Harbour entrance) to Spectacle Island.

With few exceptions, the beach shell assemblage contains no species currently represented in the living fauna. The exceptions are *Austrocochlea porcata*, *Bembicium aurantum*, *Saxostrea glomerata*, *Mytilus galloprovincialis* and *Irus crenatus*. Of these species fresh dead specimens are occasionally seen, but generally the beach fauna consists of material which has been deceased for an extended period.

Current speculation is that this differing shell assemblage has been cast up on the banks as a result of dredging operations disturbing the harbour floor, and enhanced by the activities of the River Cat service between Sydney and Parramatta. It is also arguable that this dead material represents the mollusc fauna of Sydney Harbour as it was immediately prior to changing water quality and the industrialisation of

Sydney during the last century.

HOLOCENE FOSSIL DEPOSIT

The term "sub-fossil deposit" is used advisedly.

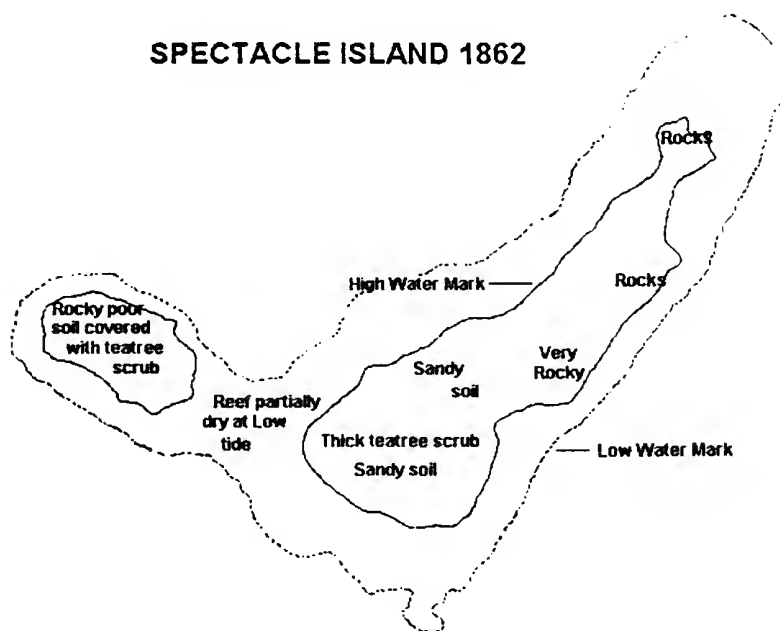
Located between buildings designated "46" and "47", which are set deep into excavations into the "living rock", is a loosely consolidated sandy deposit. It is approximately two metres above local "filled" ground and approximately four metres above the current low-water mark. The deposit is probably less than ten cubic metres in volume and contains a mollusc population which is significantly at variance with either the living fauna or the beach fauna already referred to.

The dominant bi-valve species in the deposit is *Neotrigonia margaritecea* and the dominant gastropods are *Polinices sordida*, and the strutholamid *Tylospira scutularia*. As far as is known, none of these species can be found alive in the upper part of Sydney Harbour.

Research into the origin of the deposit has been undertaken at the N.S.W. State Library and the N.S.W. State Archives, without success.

The deposit is apparently not an aboriginal midden as the material is not charred or broken, or consistent with the known food preferences of the aboriginals. The presence of large numbers of very small species is also a significant factor against this theory. It is also very unlikely to be a natural in situ geological deposit. It is too small and too unrelated to the surrounding area and would have been commented on previously due to its extraordinary diversity of species. A possible explanation is that the material came from the original isthmus between the two islands and was hauled up to the site for building purposes during the construction of buildings "46" and "47". However, the species composition suggests a deeper water fauna. More likely it is dredge spoil from the harbour floor. The location of the deposit is presently part of a bird sanctuary which rules out comprehensive examination.

Specimens of all the species listed for Spectacle Island are in a vouchered collection curated by the author and located at the author's home.



SPECTACLE ISLAND 1996

Drawn from aerial photograph 1953
and showing approx Low Water
Mark

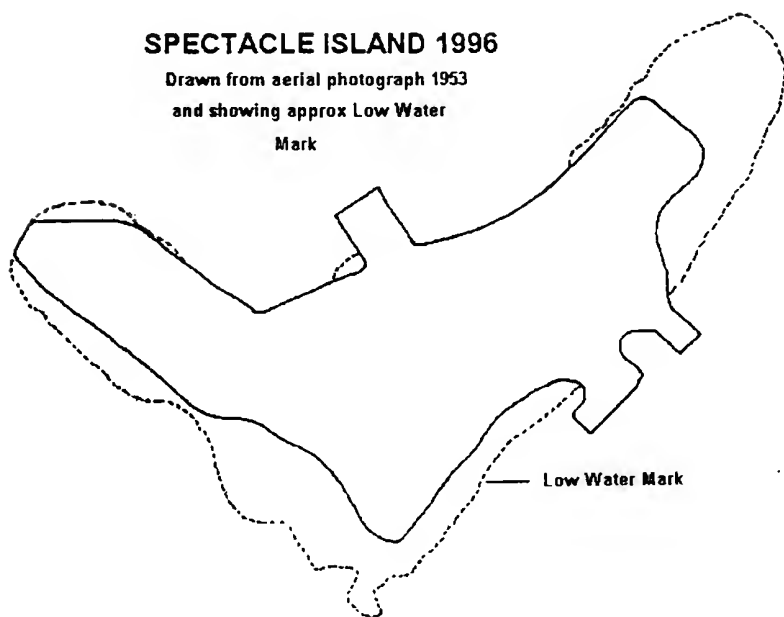


Figure 1.

Top: Redrawing of the original survey map. Bottom: Drawing based on a 1953 aerial photo.

LIST OF THE MOLLUSC FAUNA OF SPECTACLE ISLAND

| GASTROPODS | | | | |
|---------------|--|------|------|--------|
| | | Live | Dead | Fossil |
| ACMACIDAE | <i>Notoacmea petterdi</i> Tenison Woods, 1876 | | | X |
| | <i>Notoacmea mimmula</i> Iredale, 1924 | X | | |
| PATELLIDAE | <i>Patellanax chapmani</i> (Tenison Woods, 1876) | | | X |
| | <i>Patelloida latistrigata</i> (Angas, 1865) | | | X |
| | <i>Cellana tramoserica</i> (Sowerby, 1825) | | | X |
| NERITIDAE | <i>Nerita atramentosa</i> Reeve, 1885 | | | X |
| HALIOTIDAE | <i>Haliotis ruber</i> (Leach, 1814) | | | X |
| FISSURELLIDAE | <i>Diodera lineata</i> (Sowerby, 1841) | | X | |
| | <i>Montfortula rugosa</i> (Quoy & Gaimard, 1834) | | | X |
| | <i>Amblychilepas nigrata</i> (Sowerby, 1834) | | | X |
| | <i>Tugali parmophoidea</i> (Quoy & Gaimard, 1834) | X | | X |
| | <i>Scutus antipodes</i> Montford, 1810 | | X | |
| TROCHIDAE | <i>Bankivia fasciata</i> (Menke, 1830) | | | X |
| | <i>Austrocochlea porcata</i> Adams, 1853 | X | X | X |
| | <i>Fossarina patula</i> (Adams & Angas, 1869) | | | X |
| | <i>Herpetopoma aspersa</i> (Phillipi, 1846) | | | X |
| | <i>Calthalotia comtessi</i> (Iredale, 1931) | | X | X |
| | <i>Ethminolia tasmanica</i> (Tenison Woods, 1877) | | | X |
| | <i>Clanculus brunneus</i> Adams, 1853 | | | X |
| | <i>Cantharidella picturata</i> (Adams & Angas, 1862) | | X | X |

| Gastropods cont | | Live | Dead | Fossil |
|-----------------|--|------|------|--------|
| TROCHIDAE | <i>Notogibbula bicarinata</i> (Adams, 1854) | | | X |
| PHASIANELLIDAE | <i>Phasianella ventricosa</i> Swainson, 1822 | | | X |
| TURBINIDAE | <i>Ninella torquata</i> Gmelin, 1791 | | | X |
| | <i>Astralium tentoriformis</i> (Jonas, 1845) | | | X |
| | <i>Subninella undulata</i> Solander, 1786 | | | X |
| CERITHIDAE | <i>Velacumantis australis</i> (Quoy & Gaimard, 1834) | | X | |
| | <i>Cacazeliana granaria</i> (Kiener, 1842) | | X | X |
| | <i>Zeacumantis subcarinatus</i> (Sowerby, 1855) | | X | |
| POTAMIDAE | <i>Pyrasus ebenius</i> (Bruguiere, 1792) | | X | |
| LITTORINIDAE | <i>Bembicium aurantum</i> (Quoy & Gaimard, 1834) | X | X | |
| | <i>Nodilittorina unifasciata</i> Gray, 1826 | | X | X |
| | <i>Bembicium nanum</i> (Lamarck, 1822) | X | X | |
| RISSOIDAE | <i>Rissoid</i> sp. | | | X |
| HIPPONICIDAE | <i>Antisabia folicea</i> Quoy & Gaimard, 1834 | | | X |
| CALYPTRAEIDAE | <i>Crepidula aculeata</i> (Gmelin, 1791) | | | X |
| | <i>Sigapatella calyptraeformis</i> (Lamarck, 1822) | | | X |
| VERMETIDAE | <i>Serpulorbis</i> sp. | | | X |
| NATICIDAE | <i>Eunaticina linnaena</i> (Récluz, 1843) | | | X |
| | <i>Polinices didyma</i> (Röding, 1798) | | | X |
| | <i>Polinices sordida</i> (Swainson, 1821) | | X | |
| CASSIDAE | <i>Cassis</i> sp. | | | X |

| Gastropods cont | | Live | Dead | Fossil |
|-----------------|---|------|------|--------|
| RANELLIDAE | <i>Cabestana spengleri</i> Perry, 1811 | | X | X |
| | <i>Sassia parkinsonia</i> (Perry, 1811) | | | X |
| TRIPHORIIDAE | <i>Notosinister</i> sp. | | | X |
| STRUTHOLARIIDAE | <i>Tylospira scutularia</i> Gmelin, 1791 | | | X |
| MURICIDAE | <i>Bedevea hanleyi</i> (Angas, 1867) | X | X | X |
| | <i>Agnewia tritoniformis</i> (Blainville, 1832) | | | X |
| | <i>Dicathais orbita</i> Gmelin, 1791 | | | X |
| | <i>Chicoreus denudatus</i> (Perry, 1811) | | X | |
| | <i>Morula marginalba</i> Blainville, 1832 | | X | |
| NASSARIIDAE | <i>Nassarius pauperus</i> (Gould, 1850) | | | X |
| | <i>Nassarius burchardi</i> (Dunker in Philippi, 1849) | | X | X |
| | <i>Nassarius particeps</i> (Hedley, 1915) | | X | X |
| COLLUMBELLIDAE | <i>Parviterebra trilineata</i> Adams & Angas, 1863 | | | X |
| | <i>Mitrella australis</i> (Gaskoin, 1852) | | | X |
| | <i>Pyrene scripta</i> Lamarck, 1822 | | X | |
| OLIVIDAE | <i>Belloliva triticea</i> (Duclos, 1835) | | | X |
| | <i>Belloliva leucozona</i> (Adams & Angas, 1864) | | | X |
| MARGINELLIDAE | <i>Ovaginella</i> sp. | | | X |
| | <i>Pillagenella</i> sp. | | | X |
| MITRIDAE | <i>Mitra</i> sp. | | | X |
| TURRIDAE | <i>Turrid</i> sp. (<i>Phenotoma</i> ?) | | | X |

| Gastropods cont | | Live | Dead | Fossil |
|-----------------|---|------|------|--------|
| SIPHONARIIDAE | <i>Siphonaria diemensis</i> Quoy & Gaimard 1833 | X | X | |
| SCAPHANDRIDAE | <i>Acteocina fusiformis</i> (Adams & Angas, 1854) | | | X |
| BULLIDAE | <i>Bulla botanica</i> (Hedley, 1918) | | X | X |

BIVALVES

| | | Live | Dead | Fossil |
|--------------|--|------|------|--------|
| ARCIDAE | <i>Barbatia squamosa</i> (Lamarck, 1817) | | | X |
| | <i>Anadara trapezia</i> (Deshayes, 1840) | | X | |
| GLYCYMERIDAE | <i>Glycymeris flammeus</i> (Reeve, 1843) | | | X |
| TRIGONIIDAE | <i>Neotrigonia margaritacea</i> (Lamarck, 1804) | | | X |
| PECTINIDAE | <i>Pecten fumata</i> Reeve, 1852 | | X | X |
| | <i>Chlamys livida</i> (Lamarck, 1819) | | X | |
| LIMIDAE | <i>Stabilima strangei</i> Sowerby, 1872 | | | X |
| | <i>Lima nimbifer</i> Iredale, 1924 | | | X |
| OSTREIDAE | <i>Saxostrea glomerata</i> Gould, 1850 | X | X | |
| | <i>Ostrea</i> sp. | | | X |
| | <i>Ostrea angasi</i> Sowerby, 1871 | | X | |
| ANOMIIDAE | <i>Anomia descripta</i> Iredale, 1936 | | X | |
| MYTILIDAE | <i>Lanistina impacta</i> (Herman, 1782) | | | X |
| | <i>Xenostrobus pulex</i> (Lamarck, 1819) | | X | |
| | <i>Mytilus galloprovincialis</i> (Lamarck, 1819) | X | X | X |
| | <i>Mytilus</i> species | | | X |

| Bivalves cont | | Live | Dead | Fossil |
|-----------------|---|------|------|--------|
| MYTILIDAE | <i>Trichomya hirsutius</i> (Lamarck, 1819) | | X | |
| CLEIDOTHAERIDAE | <i>Cleidothaerus albidus</i> (Lamarck, 1819) | | X | X |
| CARDITIDAE | <i>Cardita excavata</i> Deshayes, 1854 | | | X |
| LUCINIDAE | <i>Divalucina cumingi</i> (Adams & Angas, 1863) | | | X |
| UNGULINIDAE | <i>Numella adamsi</i> (Angas, 1867) | | | X |
| CARDIIDAE | <i>Fulvia tenuicostata</i> (Lamarck, 1819) | | | X |
| ERYCINIDAE | <i>Markellia</i> sp. | | | X |
| VENERIDAE | <i>Gomphina undulosa</i> (Lamarck, 1818) | | | X |
| | <i>Irus crenatus</i> (Lamarck, 1818) | X | X | |
| | <i>Dosina sculpta</i> (Hanley, 1845) | | X | X |
| | <i>Chioneryx cardoides</i> (Lamarck, 1818) | | | X |
| | <i>Notocallista kingi</i> (Gray, 1827) | | | X |
| | <i>Callista roseatincta</i> (Smith, 1885) | | | X |
| | <i>Tawera lagopus</i> (Lamarck, 1818) | | | X |
| | <i>Antigona materna</i> (Iredale, 1929) | | X | |
| | <i>Circe scripta</i> (Linnaeus, 1758) | | X | |
| | <i>Tapes dorsata</i> (Lamarck, 1818) | | X | |
| MESODESMATIDAE | <i>Anapella cycladea</i> (Lamarck, 1818) | | X | |
| SOLENIDAE | <i>Solen vaginoides</i> (Lamarck, 1818) | | | X |
| MACTRIDAE | <i>Cryptomya elliptica</i> (Adams, 1851) | | | X |
| PSAMMOBIDAE | <i>Soletellina donacoides</i> (Reeve, 1857) | | | X |

| Bivalves cont | | Live | Dead | Fossil |
|---------------|---|------|------|--------|
| CORBULIDAE | <i>Corbula stolata</i> (Iredale, 1930) | | X | |
| MYACHAMIDAE | <i>Myadora pandoriformis</i> (Stutchbury, 1830) | | | X |
| HIATELLIDAE | <i>Hiatella australis</i> (Lamarck, 1818) | | X | |
| OTHER PHYLLA | | | | |
| | | Live | Dead | Fossil |
| BRACHIOPODA | <i>Terebratula sp.</i> | | | X |
| CRUSTACEA | Crab claw | | | X |
| ECHINOIDEA | Spines and plates | | | X |
| CIRRIPIEDIA | <i>Austrobalanus imperator</i> | | | X |
| BRYOZOA | <i>Phidolopora avicularia</i> | | | X |

BOOKS AND BOOK REVIEWS

FOSSIL NEWS: JOURNAL OF AMATEUR PALEONTOLOGY. Bone Bug Publications. 6803 Whitman Street, Dash Point, WA 98422. USA. Subscription US\$38 per year.

There are very few publications that focus on fossils and the interests of amateur paleontologists, the *Digest* of the Mid American Paleontological Society and *The Fossil Collector* are two that immediately come to mind. There are a variety of professional publications, but unless the reader is learned in either biology or paleontology, they are not always easy to comprehend and often beyond the interest level of most amateurs. In addition, subscriptions to these publications often carry a sizable price tag.

The founder and editor of *Fossil News*, Joe Small, kindly provided nine back issues

to peruse in order to prepare this review. The publication runs 24 pages with black & white photographs and illustrations. Subject matter in this new periodical (it was started in 1995) includes vertebrate and invertebrate paleontology as well as paleobotany. Paper quality does not allow for high quality photographic reproductions, but most are adequate.

Some articles that appear in 1996 issues include: Moroccan Trilobites (a favorite of mine), *Tyrannosaurus rex*. What is Cladistics, Pend Orielle (Washington) Trilobites, Digging for Dinosaurs in Alaska, Cretaceous Mollusks, The Dinosaur Formerly Known as *Sue*, and the Florrisant Fossil Beds.

Fossil News has several regular columns. "Children's Corner" is designed to be of use in the classroom setting. Children's Corner features a different type of fossil, covered (or should I say, uncovered!) so far has been petrified wood, sea urchins, crabs, horses, trace fossils and making fossils. This column generally does not provide educators with ideas for hands on learning activities. Some of the photographs will not reproduce well.

The In The Literature column reviews both books and current articles relevant to paleontology (much like some material in *The Fossil Collector*). Both old and new books are reviewed, a great idea because many amateurs are not aware of the many thousands of books published in the last thirty years.

There is also a marketplace section which features a variety of classified-type advertisements.

Joe has a regular editorial column that often taps on controversial subjects like evolution, public education and government control of fossil collecting areas, he also gives accounts of personal field experiences.

Some articles create new words, like "dinosaurology" and "paleoinvertebratology." While the editor hopes that these new words would serve to clarify the field, like paleoclimatology and paleoecology (inaccurately called "paleoenvironmentology" in one article), I doubt it will accomplish this purpose. I think vertebrate and invertebrate paleontology is sufficient.

Fossil collectors, while a dedicated lot, represent a relatively small percentage of people interested in earth sciences as a hobby. Consequently, there are not a lot of periodicals designed for non-technical readers. For those who cannot read enough about fossils and what is going on in the world today with regards to discoveries, interpretation, etc., *Fossil News* is worth reading.

Review by Alan Goldstein.

UNDERSTANDING FOSSILS: AN INTRODUCTION TO INVERTEBRATE PALAEOONTOLOGY. by Peter Doyle, with contributions by Florence M. D. Lowry. John Wiley & Sons, Chichester (England), 1996, 409pp., ISBN 0 471963518. Recommended retail price AUS\$54.00 (softcover).

Note: In Australia this book is distributed by Jacaranda Wiley Ltd.

“Each fossil has a tale to tell, as each one is a fragment of an ancient ecosystem, a frozen frame in an evolutionary lineage or a chronometer of geological time.” In a nutshell, this one sentence in the author’s Preface clearly describes the predominant theme that extends throughout this book.

Following the requisite introductory chapter “What is Palaeontology,” the book is divided into three distinct parts: Part 1, Key Concepts; Part 2, Introduction to the Fossil Record; and Part 3, Fossils as Information. While each part is virtually self contained, the emphasis throughout the book on palaeoecology, palaeoenvironmental analysis, biostratigraphy and evolutionary processes, more than adequately unites the text.

Part 1, as well as describing what constitutes a fossil, deals with the processes of fossilisation (taphonomy) and the nature of the fossil record; the concept of fossils as once living organisms and the need to understand palaeoecology in addition to traditional taxonomy; the pattern, process and scale of evolution; and the principles of biostratigraphy and chronostratigraphy.

Part 2, after an introduction to the principal features of the fossil record - development of life on Earth, separate chapters discuss the general features, morphology and evolution of the major fossil groups together with their application in the various palaeosciences which form the underlying theme. The specific groups covered are: bivalves and gastropods, cephalopods, brachiopods, echinoids

and crinoids, trilobites, corals, graptolites, bryozoans, foraminifera, ostracods, and trace fossils.

Part 3, deals with the use of data obtained from the fossil record in the study of palaeobiology, palaeoenvironmental analysis and stratigraphy.

As with most modern textbooks, important words and scientific terms are highlighted in bold type and, as easily understood definitions are included in the text, no glossary is provided. Case studies which emphasize major points in each chapter are used fairly extensively throughout the book, sometimes, as in Part 1, they are separated from the main text by boxes, a feature which can sometimes be distracting. Figures are well drawn and easy to comprehend, especially those concerning the typical morphology of each fossil group. However, the odd figure in Part 3 seems to have lost some meaning during modification from the original source and, in the red face department, the zonal prefixes in one figure have been inadvertently transposed. Nevertheless, what I found most gratifying is the continuity of the sequence of figures and text in each chapter, particularly in Part 2. In addition, the use of numerous tables throughout the text, in particular the tables that detail the palaeoenvironmental limiting factors (temperature, oxygenation, salinity, depth, substrate and turbulence) that affect the occurrence of the major fossil groups, give the reader quick access to useful information often not found in the more traditional invertebrate palaeontology textbooks.

Each chapter ends with a summary of key points followed not only by a comprehensive list of publications for further reading but also a brief discussion of their contents and possible use to the reader. A further summary is provided at the end of each of the three parts. There are no appendices (praise be...), simply a subject index and a systematic index.

Other examples of the wide diversity of material in this book are the concise accounts of such topics as DNA in fossils, concepts of microevolution and macroevolution (with an example of both gradualism and punctuation in foraminifera), determination of the Precambrian - Cambrian boundary, Lower Palaeozoic faunas around Gondwana, interpretation of ancient salinity levels, and the nature of an extinction boundary (Cretaceous - Tertiary), etc.

"Understanding Fossils." as the author states, is primarily aimed at first-level geology and, to a lesser extent, biology students. It is exceedingly well written and illustrated with innumerable figures and tables, supplemented with a reasonable number of photographs. As an overview and introduction to invertebrate palaeontology the book brings the reader up to date with a wide range of palaeontological topics, information normally available only after a considerable amount of searching through journals and specialist text books. The emphasis on the value of fossils in applied studies sets it aside from the more conventional texts, and indeed makes it far more interesting to read and absorb than those which simply stress the importance of morphology, anatomy and taxonomy. I would suggest that it will be of value to geology students well past their first year studies and certainly of considerable use as a broad palaeoscience reference for serious amateur palaeontologists and collectors. However, in this regard, it should be stressed that this book is not a guide to the identification of individual fossils, other than to the higher taxonomic levels of the common groups listed above (Part 2).

With over 400 pages and a RRP of AUS\$54 it is exceedingly good value for money. To date there has only been a softcover edition published. While reviewers often complain that only a hardcover version of a book is available (usually at a cost out of the reach of most students), in this instance it is a pity that such an edition has not been considered, as the book and the binding technique used may be a problem with heavy use in a library situation.

Review by Frank Holmes, Heathmont, Victoria.

AUSTRALIAN QUATERNARY VERTEBRATES. Papers arising from a symposium held at Wellington Caves, New South Wales, December 1995. Published 1 March 1997 by the Linnean Society of NSW, Editor M. L. Augee. 328 pp.

Below is the list of papers presented at the Wellington Caves symposium and the contents of the publication.

Archer, M., Black, K. & Nettle, K. Giant Ringtail Possums (Marsupiala, Pseudocheiridae) and Giant Koalas (Phascolarctidae) from the late Cainozoic of Australia.

Bishop, N. Functional anatomy of the macropodid possums.

- Dawson, L. & Augee, M. L. The Late Quarternary sediments and fossil vertebrate fauna from Cathedral Cave. Wellington Caves, New South Wales.
- McDowell, M. C. Taphonomy and palaeoenvironmental interpretation of a late Holocene deposit from Black's Point Sinkhole, Venus Bay, SA.
- McNamara, J. A. Some smaller macropod fossils of South Australia.
- Molnar, R. E. & Kurz, C. The distribution of Pleistocene vertebrates on the eastern Darling Downs, based on the Queensland Museum collections.
- Morris, D. A., Augee, M. L., Gilleson, D. & Head, J. Analysis of a Late Quaternary deposit and small mammal fauna from Nettle Cave, Jenolan, New South Wales.
- Muirhead, J., Dawson, L. & Archer, M. *Perameles bowensis*, a new species of *Perameles* (Peramelemorphia, Marsupialia) from Pliocene faunas of Bow and Wellington Caves, New South Wales.
- Osborne, R. A. L. Rehabilitation of the Wellington Caves Phosphate Mine: implications for Cainozoic stratigraphy.
- Prideaux, G. T. & Wells, R. T. New *Sthenurus* species (Macropodidae, Diprotodontia) from Wellington Caves and Bingara, New South Wales.
- Ride, W. D. L. & Davis, A. C. Origins and setting: mammal Quaternary palaeontology in the Eastern Highlands of New South Wales.
- Ride, W. D. L., Pridmore, P. A., Barwick, R. E., Wells, R. T. & Heady, R. D. Towards a biology of *Propleopus oscillans* (Marsupialia: Propleopinae, Hypsiprymnodontidae).
- Willis, P. M. A. & Molnar, R. E. A review of the Plio-Pleistocene crocodilian genus *Pallimnarchus*.

The standard price of Linnean Society scientific publications is usually \$70 but this publication is being offered at a price of \$35, for individual use, including postage. Overseas orders for copies for individual use may be ordered for AUD\$35 plus postage. Library and Institutions are required to pay the standard volume price of \$70.

For orders, contact:

The Secretary
Linnean Society of NSW
PO Box 457
Milsons Point NSW 2061
Tel: (02) 9929 0253

LAYERS OF TIME: The Blue Mountains and Their Geology. 34pp. softcover. ISBN 0 7313 0274 5. Recommended retail price \$9.95 plus \$5.00 postage.

Produced by the New South Wales Department of Mineral Resources, in collaboration with the National Parks and Wildlife Service, the Geological Society of Australia Inc, and the School of Geology and Geophysics of the University of Sydney, *Layers of Time: The Blue Mountains and Their Geology* is an excellent tour guide to the Blue Mountains (west of Sydney).

Although I wouldn't normally include a book review that has no fossil content (short of one picture of the fossil fern *Rienitsia spathulata*), for this publication I will make an exception. *Layers of Time* is a travel guide to the Blue Mountains which provides an easy to understand and highly informative narration on how the mountains formed and have been shaped throughout time. Also included are interesting historical features of some areas visited in the booklet.

The booklet is in two major sections. The first is a summary of the geology of the whole area, taking into account the rocks of the Sydney Basin, which make up the mass of the Blue Mountains, as well as those rock which were laid down before and after those of the Sydney Basin. This section is also accompanied by a time scale which shows roughly when the different rock structures were laid down.

Section two, Places of Scenic and Geological Interest, describes thirty six places of mainly geological interest. The descriptions follow the Great Western Highway, from the Nepean River, westwards through the mountains, returning via the Bells Line of Road. The introduction does state that 'If you are limited to one day's exploration, sampling may be the best approach, since it is impossible to visit all the places discussed in one day.' Based on this statement, and knowing the Blue Mountains a little, I recommend that this would be an excellent weekend trip.

Each of the locations listed in the booklet has a brief explanation of what can be seen and what to look for along with geological and historical information. While the explanations are brief it is pleasing to see that what is written provides the reader with enough information to be able to walk away from any of the locations and actually know something about it. This is something which has been missed in other publications from time to time.

The booklet also includes a geological map of the region, locality maps (one of the maps is a false colour satellite image of the Blue Mountains area with the addition of some major landmarks and all the localities discussed in the text), a page dedicated to some of the early geological investigators in the Blue Mountains, and a section explaining some of the technical terms, a useful inclusion which now occurs in most of today's semi-scientific publications.

Throughout the Places of Scenic and Geological Interest section are small pictures of either binoculars, hiking boots, a magnifying glass, and, in a couple of places, a wallet with a dollar sign leaving it. While the binoculars and hiking boot are fairly self explanatory, the magnifying glass indicates areas where a more detailed look should be undertaken and the wallet indicates an area where a fee has to be paid.

The photography throughout the booklet is superb and gives an stunning example of some of the landscapes that can be seen in the Blue Mountains. The diagrams which occur in the booklet are also easy to understand. The inclusion of information text boxes, which in some books can be obtrusive, have been used to provide the reader with more historical and geological information and by no means detract from the mainstream narration.

Overall, I found this booklet to be a wealth of information on the geology and history of the Blue Mountains which is easy to read, follow and comprehend. For those people, both Sydneyiders and interstateers, considering a tour of the Blue Mountains this booklet would be a valuable companion. My only criticism of the booklet, albeit a shallow one, would be that it supplies enough information and photography that a person purchasing it may consider not having any need to visit the Blue Mountains as the booklet supplies it all. I would not recommend this approach though.

The booklet will shortly be available in NPWS outlets and selected bookshops but if readers would like to obtain a copy now, please contact:

Customer Service Officer
Department of Mineral Resources
PO Box 536
St Leonards NSW 2065

Reviewed by Paul Tierney

EUCLA BASIN (WESTERN AUSTRALIA) ECHINOID NAMED

Those of you who have travelled the Nullarbor and collected gastropods, bivalves and echinoids from the pits and spoil heaps in the vicinity of the Hampton Microwave Repeater Station, east of Madura, will be pleased to learn that the fairly common laganid clypeasteroid found on the Roe Plains, has been formerly named *Peronella ova* McNamara, 1996. These fossils are from the Late Pliocene Roe Calcareenite. Two other species of *Peronella* from Western Australia, *P. ricta* (Gregory, 1892) and *P. orbicularis* (Leske, 1878) have also been redescribed.

Reference

McNamara, K. J., 1996. Plio-Pleistocene *Peronella* (Echinoidea: Clypeasteroidea) from Western Australia. Records of the Western Australia Museum 18: 193-202.



Peronella ova McNamara 1996 from the Late Pliocene
Roe Calcareenite, Roe Plains, Western Australia (x1.5).

UPCOMING EVENTS IN THE PALAEOONTOLOGICAL CALENDAR.

Conferences:

July 7-11, 1997. Sixth Conference on Australasian Vertebrate Evolution. Palaeontology and Systematic (CAVEPS). Western Australia Museum, Perth.

November 30 to December 3, 1997. Permian of the Eastern Tethys. Rusden Campus, Deakin University, Melbourne. Contact Guang R. Shi, (03) 9244 7276.

December 8-11, 1997. Palaeobiogeography of Australasian Floras and Faunas. University of Wollongong. Contact Tony Wright, (042) 213 329.

July 6-10, 1998. The Australian Geological Convention, Townsville. Incorporating the Mary Wade Symposium. Special Biotas and Faunal and Floral Successions. Contact Alex Cook, (07) 3840 7665.

Talks and Seminars:

May 28, 1997. Early Collectors of Vertebrate Fossils. Presented by Dr Alan Bartholomai at the Queensland Museum. Contact Sybil Monteith or Faye Schutt, Ph (07) 3840 7635.

June 6, 1997. Saga of the Swamp Beasts. Presented by Dr Tony Thulborn at the University of Queensland. Contact Ann Cameron, Ph (07) 3365 2506.

June 18, 1997. Brilliant Careers in Palaeontology. Presented by Dr Susan Turner at the Queensland Museum. Contact Sybil Monteith or Faye Schutt, Ph (07) 3840 7635.

SOME DEVONIAN SNAILS FROM NORTH QUEENSLAND

Dr Alex Cook. Queensland Museum, P.O. Box 3300 South Brisbane, 4101.

Several years of research into Queensland's Devonian gastropods have revealed extensive and diverse faunas, some of which are still in the process of being described. Gastropods are minor elements to the fossil faunas of the Burdekin Basin, Broken River Province and Ukalunda Beds, but their ornamented helical spires (mostly) make them attractive and satisfying molluscs to work with.

Four gastropods are recognised from the Ukalunda Beds, west of Collinsville, NEQ. The most abundant and attractive being *Kitikamispira ukalundensis* Cook, 1995. Other rarer snails are *Tropidodiscus foliatus* Cook, *Trochonema* (*Trochonema*) *sp.* and *Hornyzyga camilleriae* Cook. These snails are late Early Devonian (Emsian) in age. Readers should also see Glenn Broek and John Talent's fine paper on the brachiopods of this area (see References below).

From the late Middle Devonian (Givetian) there are already four large snails described, prior to 1996. Robert Etheridge Jr (1917) described *Polyamma burdekinensis* from Big Bend, but John Brookes-Knight (1937) recognised the invalidity of the generic assignment and gave the snail the name *Burdikinia*

burdekinensis (Etheridge Jr. 1917). Eric Heidecker, at the University of Queensland, described two new genera of snails from the same area in 1959. *Austerum carinatum* and *Labroscuspis nodosa*, both names have survived in the literature without alteration. I was lucky enough to be shown some specimens of another snail from the same Big Bend Arkose and Burdekin Formation, which is named *Fletcheriella septata* Cook, 1993, so called because of the many partitions in the shell. These four Burdekin snails are very interesting due to their large size and thick shell, and their occurrence within sedimentary units formed in high energy, nearshore environments. The species are endemic to north Queensland, and *Burdikinia burdekinensis* and *Labroscuspis nodosa* are now recognised in the adjacent Broken River Province. The genus *Labroscuspis* is also known from Japan, Tomoki Kase described a species from the Kitikami Mountains (Kase, 1989).

From the Broken River Province, 28 species of Middle Devonian gastropods have been described (Cook & Camilleri, 1996). The bulk of the fauna comes from the Middle Devonian (Givetian) Papilio Mudstone and the uppermost Dosey Limestone, but some older gastropods are present in the upper Burges Formation. These faunas show affinity to typical Old World Realm gastropods. Common taxa are *Yunnanella pharlapensis*, *Austaloxa tasselli*, and several species of *Murchisonia*.

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